FGPSF 1.20

ecology and environment, inc.
Global Environmental Specialists
720 Third Avenue, Suite 1700
Seattle, Washington 98104
Tel: (206) 624-9537, Fax: (206) 621-9832

CONFIDENTIAL

MEMORANDUM

Date: November 11, 2011

To: Brandon Perkins, Site Assessment Manager, EPA, Seattle, WA, Mail Stop ECL-112

From: Linda Costello, START-3 Project Leader, E & E, Seattle, WA

Subject: Hazard Ranking System Score
Fourth Avenue and Gambell Parking Lot
Anchorage, Alaska

Ref: Contract Number: EP-S7-06-02
Technical Direction Document Number: 11-04-0001

cc: Derek Pulvino, START-3 Project Manager, E & E, Seattle, WA

A Hazard Ranking System (HRS) Score of 30.98 was derived for the Fourth Avenue and Gambell Parking Lot (FGPL) site, which is located in Anchorage, Alaska as part of a Preliminary Assessment (PA). The site score is based on the PA report generated for the site, and when necessary professional assumptions. The HRS scoresheets, which were generated using Quickscore version 3.0.3 software, are attached.

Site Description:
The FGPL is located within the downtown core of the City of Anchorage, Alaska, approximately 1.3 miles east/southeast of the Cook Inlet's Knik Arm. Apart from a cellular communications tower and associated equipment located on the southeast corner of the property, the site is undeveloped and used only as a gravel surfaced parking lot. Historic occupants of the FGPL include C and K Cleaners and NC Tire Center. Property east, south, and west of the site is primarily retail and commercial; Hyder Street, 4th Avenue, and Gambell Street border the site to the east, south, and west (respectively). Property directly north of the site is residentially occupied with a variety of single- and multi-family residences; 3rd Avenue and the former Alaska Native Hospital (ANH) property are located in increasing distance beyond those residences.

Chlorinated solvent contamination (tetrachloroethylene [PCE], trichloroethylene [TCE], vinyl chloride [VC], etc.) has been confirmed in surface soils, subsurface soils, ambient air, and ground water at the site. Soil and ground water impacts have been documented extending from FGPL onto the northern adjacent properties. The FGPL site has also been named as a potential contaminant source for ground water impacts identified approximately 1,300 feet north of the site on the Alaska Railroad Corporation property along Ship Creek.

Pathways/Threats Not Evaluated:
Due to the large number of well logs recorded within 4 miles of the FGPL property, and the lack of available tools to readily separate drinking water wells from monitoring wells, the START was directed by the TM to only look at well logs for facilities within ½ mile of the FGPL. All municipal wells within a 4 mile radius of the FGPL property were however included in our evaluation of "Drinking Water Targets."

Site Characteristics Information:

Site Name:	Fourth Avenue and Gambell Parking Lot
CERCLIS ID Number:	AKN001002925
Latitude:	61° 13' 7.81"
Longitude:	-149° 52' 11.95"
Legal Description:	Section 18, Township 13, Range 3 West, of the Seward Meridian
County:	Municipality of Anchorage Borough
Congressional District:	At Large

Sources:

Based on information included in reports for the FGPL property, four sources have been identified:

Wood/Log Cribs (Other):

1. One 8-foot-square "wood crib" buried "approximately 12 feet below the ground surface" (bgs) was encountered during excavation activities on the west side of the former NC Tire Center building. This crib was plumbed to "underground collection sumps" identified near the hoists in the NC Tire Center building. Analysis of one of the samples collected from material in the crib revealed PCE (4.5 parts per million [ppm]); cis-1,2-dichloroethylene (0.8 ppm); 1,2,4-trimethylbenzene (178 ppm); 1,3,5-trimethylbenzene (49.5 ppm); toluene (9 ppm); n-butylbenzene (19.8 ppm); sec-butylbenzene (15.6 ppm); arsenic (9 ppm); cadmium (20 ppm); chromium (27 ppm); and lead (996 ppm) at concentrations expected to be in excess of background concentrations.

   From the size description provided, the total volume of this crib was calculated as 18.963 cubic yards. The hazardous waste quantity for this source is 7.58 (i.e., 18.96 cubic yards / 2.5 for Tier C).

2. A second "log crib" was identified on the east side of the former C and K Cleaners facility. Analysis of the single soil sample collected from near this crib revealed PCE (1.0 ppm) at a concentration expected to be in excess of background concentrations. As the size of this crib was not provided, the START assumes it to be the same size as the "wood crib" encountered near the former NC Tire property.

As with the first crib, the total volume of this crib was calculated as 18.963 cubic yards. The hazardous waste quantity for this source is 7.58 (i.e., 18.96 cubic yards / 2.5 for Tier C).

Buried Drums:

3. Four buried drums "marked for use in dry cleaning" were encountered during exploratory trenching near the former C and K Cleaners. Analysis of soil collected from near these drums revealed PCE (3.2 ppm) at a concentration expected to be in excess of background concentrations. The four drums were reported to be empty; however, the fate and/or size of the drums was not documented.

   As the drum sizes were not reported, the START assumed each drum as a standard 55 gallon drum storing 50 gallons of dry cleaning solvent each; or a total of 2,000 pounds of solvent (i.e., 50 gallons per drum x 4 drums x 10 pounds per gallon). The hazardous waste quantity for this source is 2,000 for Tier A.

Contaminated Soil:

4. An area of PCE and TCE contaminated soil that extends across the majority of the FGPL site and onto the northern adjacent residential properties has been confirmed. These soil impacts are located within an approximately 80,830-square-feet area; an approximately 10,380-square foot subset of this contaminated area is located less than 2 feet beneath the ground surface. Soil impacts extend to the ground water interface at approximately 40 feet bgs.

   The 80,830 square foot area was calculated by drawing a polygon around MW-2, MW-7, SB-6, SB-5, SB-2, test pit TP-6, and the hydraulic hoist within the NC Tire store. The 10,380 square area was calculated by drawing a polygon around borings A, C, D, SB-2, SB-3, and SB-4. The volume of contaminated soil is estimated to be 415,200 cubic feet (i.e., 10,380 square feet x 40 feet); or 15,378 cubic yards (i.e., 415,200 cubic feet / 27 cubic feet per cubic yard). The hazardous waste quantity for this source is 6.15 (i.e., 15,378 cubic yards / 2,500 for Tier C).

GROUND WATER MIGRATION PATHWAY:

The shallow aquifer is being evaluated, however, for the purposes of this memorandum the START assumes the shallow and deeper aquifers are interconnected.

Ground Water Likelihood of Release:

- An observed release is documented. Contaminants identified in ground water include PCE, TCE, and VC. An observed release value of 550 is assigned.

A ground water likelihood of release value of 550 is derived.

Ground Water Waste Characteristics:

- The highest toxicity/mobility value that can be assigned is 10,000 based on TCE as the contaminant of concern.
- A hazardous waste quantity value of 100 is assigned.

A ground water waste characteristics value of 32 is derived.

Ground Water Targets:

- The nearest well factor value of 18 is assigned because the nearest well is located within one-half mile northeast of the site.
- Population:
  - 0 people are subject to Level I concentrations. A value of 0 is assigned.
  - 0 people are subject to Level II concentrations. A value of 0 is assigned.
  - Approximately 5,287 people are subject to potential contamination. The distance weighted population by distance ring is as follows:

Distance Ring	Well Population	Distance Weighted Population Value
0 to ¼ mile	0	0
¼ to ½ mile	2.67	2
½ to 1 mile	0	0
1 to 2 miles	733.9	94
2 to 3 miles	4,450.3	678
3 to 4 miles	0	0
Total distance weighted population		774/10 = 77.4

A ground water population value of 77.4 is derived.

- A resource factor value of 0 is assigned because groundwater is not used for irrigation of five or more acres for commercial food crops or commercial forage crops, watering of commercial livestock, as an ingredient in commercial food preparation, as a supply for commercial aquaculture, or as a supply for a major or designated water recreation area.
- A wellhead protection area value of 5 is assigned because multiple wellhead protection zones are located within the 4-mile TDL.

A ground water targets value of 100.4 is derived.

A GROUND WATER MIGRATION PATHWAY score of 21.42 is derived.

SURFACE WATER: OVERLAND/FLOOD (O/F) MIGRATION COMPONENT:

The Ship Creek / Cook Inlet watershed is being evaluated.

Surface Water Pathway O/F Description:

- The average annual precipitation as measured at Anchorage is 14.78 inches.
- One probable point of entry (PPE) is present 1,800-feet to the north-northwest, where water collected from the storm drain system proximal to the site discharges to Ship Creek.
- Flow rates for the TDL are as follows:

Surface Water Body Name	Flow Rate	Water Body Description	Dilution Weight
Ship Creek	144 cfs	Moderate to large stream	0.01
Cook Inlet	NA	Coastal Tidal Zone	0.0001
Knik Arm	NA	Coastal Tidal Zone	0.0001
Turnagain Arm	NA	Coastal Tidal Zone	0.0001

Surface Water O/F Likelihood of Release:

- An observed release is not documented. An observed release value of 0 is assigned.
- Potential to release by overland flow:
  - The highest containment value of 10 is assigned for the sources.

- A runoff value of 0 is assigned based on the following information:
  - A drainage value of 1 is assigned as drainage area is limited to the site itself due to the urban setting of the property.
  - A rainfall/runoff value of 0 is assigned based on the following information:
    - A soil group designation of A is assigned because soils at the site consist of well drained gravelly, sandy, loam.
    - The 2-year 24-hour rainfall event for the site is 1.5 inches.
- A distance to surface water factor value of 9 is assigned because sources are located 1,800 feet to the PPE.

A potential to release by overland flow value of 90 is derived.

- Potential to release by flood:
  - The highest containment value of 10 is assigned for sources at the site.
  - A flood frequency factor value of 0 is assigned because sources at the site are located outside of the 100-year and 500-year flood plain.

A potential to release by flood value of 0 is derived.
A surface water O/F potential to release value of 90 is derived.
A surface water O/F likelihood of release value of 90 is derived.

O/F Drinking Water Threat:

***O/F Drinking Water Waste Characteristics*:**

- The highest toxicity/persistence factor value that can be assigned is 4,000 based on TCE as the contaminant of concern.
- A hazardous waste quantity value of 100 is assigned.

A waste characteristics value of 18 is derived.

O/F Drinking Water Targets:

- A nearest intake value of 0 is assigned because there are no drinking water intakes located within the 15 mile TDL.
- Population
  - 0 people are subject to Level I concentrations. A value of 0 is assigned.
  - 0 people are subject to Level II concentrations. A value of 0 is assigned.
  - 0 people are subject to potential contamination.

A population value of 0 is derived.

- A resource value of 0 is assigned since surface water within the TDL is not used for irrigation of five or more acres of commercial food crops or commercial forage crops, for watering of commercial livestock, as an ingredient in commercial food preparation, as a major or designated water recreation area, and surface water is not useable for drinking water purposes.

An O/F drinking water target value of 0 is derived.
An O/F drinking water threat score of 0 is derived.

O/F Human Food Chain (HFC) Threat:

O/F HFC Waste Characteristics:

- The highest toxicity/persistence/bioaccumulation factor value that can be assigned is 200,000 based on TCE as the contaminant of concern.
- A hazardous waste quantity value of 100 is assigned.

A waste characteristics value of 56 is derived.

O/F HFC Targets:

- A food chain individual value of 0 is assigned because there has been no observed or documented release to surface water, and the watershed includes a moderate to large stream (i.e., 20 x 0.01).
- HFC Population:
  - No fish catch is subject to Level I concentrations. A value of 0 is assigned.
  - No fish catch is subject to Level II concentrations. A value of 0 is assigned.
  - 126,829 pounds of fish are subject to potential contamination. The dilution weighted population by surface water body is as follows:

Surface Water Body Type	Pounds of Harvest	Human Food Chain Value	Dilution Weight	Dilution Weighted Target Value
Moderate to large stream	60,532	31	0.01	0.31
Coastal tidal waters	66,297	31	0.0001	0.0031
Total dilution weighted target value		0.3131/10 = 0.03131→ 0.03		

A population value of 0.03 is derived.
An O/F HFC targets value of 0.03 is derived.
An O/F HFC threat score of 0 is derived.

<u>Surface Water O/F Environmental Threat:</u>

O/F Environmental Waste Characteristics:

- The highest ecosystem toxicity/persistence/bioaccumulation factor value that can be assigned is 2,000 based on TCE as the contaminant of concern.
- A hazardous waste quantity value of 100 is assigned.

A waste characteristics value of 18 is derived.

O/F Environmental Targets:

- Sensitive environments:
  - No environmental targets are subject to Level I concentrations. A value of 0 is assigned.
  - No environmental targets are subject to Level II concentrations. A value of 0 is assigned.
  - Environmental targets subject to potential contamination by water body type are as follows:

Surface Water Body Type	Sensitive Environment	Assigned Value	Dilution Weight	Dilution Weighted Target Value
Moderate to large stream	0.08 miles of wetland frontage	0	0.01	0
Coastal tidal zone	16 miles of wetland frontage	350	0.0001	0.035

Surface Water Body Type	Sensitive Environment	Assigned Value	Dilution Weight	Dilution Weighted Target Value
Coastal tidal zone	Habitat known to be used by Federal designated endangered species (Leatherback Sea Turtle)	75	0.0001	0.0075
	Habitat known to be used by Federal designated endangered species (Stellar Sea Lion)	75	0.0001	0.0075
	Habitat known to be used by Federal designated endangered species (Eskimo Curlew)	75	0.0001	0.0075
	Habitat known to be used by Federal designated endangered species (Bowhead Whale)	75	0.0001	0.0075
	Habitat known to be used by Federal designated endangered species (Finback Whale)	75	0.0001	0.0075

Surface Water Body Type	Sensitive Environment	Assigned Value	Dilution Weight	Dilution Weighted Target Value
Coastal tidal zone	Habitat known to be used by Federal designated endangered species (Humpback Whale)	75	0.0001	0.0075
	Habitat known to be used by State designated endangered species (North Pacific Right Whale)	50	0.0001	0.005
	Alaska Coastal Wildlife Refuge	75	0.0001	0.0075
	Susitna Flats Game Refuge	25	0.0001	0.0025
	Goose Bay State Game Refuge	25	0.0001	0.0025
Total dilution weighted target value		0.0975/10 = 0.00975 → 0.01		

An O/F environmental targets value of 0.01 is derived
An O/F environmental threat score of 0 is derived.
A SURFACE WATER O/F MIGRATION Score of 0 is derived.

SOIL EXPOSURE PATHWAY:
Soil Resident Population Threat:
***Soil Resident Likelihood of Exposure*:** Analysis of samples collected from surface soils (0 to 2 feet bgs) on the FGPL has revealed concentrations of PCE and TCE; PCE concentrations have ranged from 1.35 ppm to 13.2 ppm. Surface soil samples (0 to 2 feet bgs) were also collected from three borings located on the northern adjacent residential properties. Although no chemical analysis was performed on the samples collected from the residential lots, field screening with Color-Tec samplers detected VOC impacted soil. For the purposes of this score the START assumes the samples analyzed on the FGPL property and screened on the residential lots outline a single, approximately 10,380 square foot area of contamination; and if laboratory analysis was performed on surface soils collected from the residential lots, VOCs would be detected. A value of 550 is assigned for an observed release.

***Soil Resident Waste Characteristics*:**

- The highest toxicity that can be assigned is 10,000 based on TCE as the contaminant of concern.
- A hazardous waste quantity value of 10 is assigned.

A waste characteristics value of 18 is derived.

Soil Resident Population Targets:

- Resident Individual: A value of 50 is assigned since the area of contamination extends onto the northern adjacent residential properties; is located within 200 feet of multiple residences; and the highest reported concentration of PCE (13.2 ppm) detected in surface soil samples exceeds the cancer risk screening concentration of 12 ppm indicating that people in the residences are subject to Level I concentrations.
- Resident Population:
  - 22 people are subject to Level I concentrations. A value of 220 is assigned.
  - 0 people are subject to Level II concentrations. A value of 0 is assigned.
- Workers: A value of 0 is assigned to workers because no workers are employed at the FGPL property.
- Resources: A value of 0 is assigned to resources because no commercial agriculture, commercial silviculture, commercial livestock production or commercial livestock grazing occurs on an area of observed contamination.
- Terrestrial Sensitive Environments: A value of 0 is assigned to terrestrial sensitive environments because no terrestrial sensitive environments are present on an area of contamination.

A soil resident targets value of 220 is derived.
A soil resident population threat score of 270 is derived.

<u>Soil Nearby Population Threat</u>:

***Soil Nearby Population Likelihood of Exposure*:**

- A value of 10 is assigned to attractiveness/accessibility because the FGPL property is accessible with no public recreation use.
- A value of 20 is assigned to the area of contamination as the surface soil samples in which VOCs were detected bracket approximately 10,380 ft^2 of land.

A likelihood of exposure value of 5 is derived.

Soil Nearby Population Waste Characteristics:

- The highest toxicity that can be assigned is 10,000 based on TCE as the contaminant of concern.
- A hazardous waste quantity value of 10 is assigned.

A soil waste characteristics value of 18 is derived.

Soil Nearby Population Targets:

- A value of 0 is assigned to nearby individual because one or more persons met the criteria for a resident individual. A value of 6.60 is assigned to population within 1-mile as follows:

Distance Ring	Population	Distance Weighted Population Value
0 to ¼ mile	398	13

Distance Ring	Population	Distance Weighted Population Value
¼ to ½ mile	2,101	20
½ to 1 mile	8,611	33
Total distance weighted population		66/10 = 6.6

A soil targets value of 6.60 is derived.
A soil nearby population threat score of 594 is derived.
A SOIL EXPOSURE PATHWAY score of 32.41 is derived.

AIR MIGRATION PATHWAY:

Air Likelihood of Release:

- PCE and TCE have been detected in the outdoor air samples at the site. PCE concentrations in outdoor air ranged from 0.26 to 2.3 micrograms per liter. As PCE was also detected in soil vapor samples collected up to approximately 500-feet from the FGPL property, the START conservatively estimates that workers and residents within an approximate 350-foot radius of the center of the C and K Cleaners represent the target population and are subject to Level II concentrations. Analysis of samples collected from air within the residences and their crawlspaces revealed PCE concentrations above ADEC indoor air target levels at all four sampled residences. Further, TCE and VC were detected in these residences during one sampling event. An observed release value of 550 is assigned.

Air Waste Characteristics:

- The highest toxicity/mobility factor value for the site is 10,000 using TCE as the contaminants of concern.
- A hazardous waste quantity value of 100 is assigned.

An air waste characteristics value of 32 is derived.

***Air Targets*:**

- The nearest individual factor value is 45 because residents are subject to Level II concentrations.
- Population:
  - 0 people are subject to Level I concentrations. A value of 0 is assigned.
  - Approximately 100 people are subject to Level II concentrations. A value of 100 is assigned.
  - Population subject to potential contamination by distance ring are as follows:

Distance Ring	Residents (a)	Workers/ Students/ Teachers (b)	Total Population (a + b)	Distance Weighted Population Value
0 to ¼ mile	420	0	420	131
¼ to ½ mile	2,101	0	2,101	88

Distance Ring	Residents (a)	Workers/ Students/ Teachers (b)	Total Population (a + b)	Distance Weighted Population Value
½ to 1 mile	8,611	2,308.4	10,919.4	261
1 to 2 miles	23,465	3,757.3	27,222.3	83
2 to 3 miles	35,732	27,477	63,209	120
3 to 4 miles	37,546	2,864.1	40,410.1	73
Total distance weighted population				756/10 = 75.6

A population value of 175.6 is derived.

- A resources value of 5 is assigned because designated recreation areas occur within ½ mile of the site.
- Sensitive Environments:
  - No sensitive environments are subject to actual contamination. A value of 0 is assigned.
  - Sensitive environmental subject to potential contamination by distance ring are as follows:

Distance Ring	Sensitive Environment	Assigned Value	Dilution Weight	Distance Weighted Target Value
0 to ¼ mile	None	--	0.25	--
¼ to ½ mile	5.1 acres of wetland	25	0.054	1.35
½ to 1 mile	3.4 acres of wetland	25	0.016	0.4
1 to 2 miles	Habitat known to be used by Federal designated endangered species (Leatherback Sea Turtle)	75	0.0051	0.3825
	Habitat known to be used by Federal designated endangered species (Stellar Sea Lion)	75	0.0051	0.3825
	Habitat known to be used by Federal designated endangered species (Eskimo Curlew)	75	0.0051	0.3825

Distance Ring	Sensitive Environment	Assigned Value	Dilution Weight	Distance Weighted Target Value
	Habitat known to be used by Federal designated endangered species (Bowhead Whale)	75	0.0051	0.3825
	Habitat known to be used by Federal designated endangered species (Finback Whale)	75	0.0051	0.3825
	Habitat known to be used by Federal designated endangered species (Humpback Whale)	75	0.0051	0.3825
	Habitat known to be used by Federal designated endangered species (Wood Bison)	75	0.0051	0.3825
	Habitat known to be used by State designated endangered species (North Pacific Right Whale)	50	0.0051	0.255
	165.8 acres of wetland	175	0.0051	0.8925
2 to 3 miles	363.8 acres of wetland	350	0.0023	0.805
3 to 4 miles	818.1 acres of wetland	500	0.0014	0.7
Total distance weighted population		7.08/10 = 0.708 → 0.71		

A targets value of 226.31 is derived.
An AIR MIGRATION PATHWAY score of 48.28 is derived.

If you have any questions regarding this memorandum or its assumptions, please contact me at 206-624-9537.

****** CONFIDENTIAL ******
******PRE-DECISIONAL DOCUMENT ******
****** SUMMARY SCORESHEET ******
****** FOR COMPUTING PROJECTED HRS SCORE ******

****** Do Not Cite or Quote ******

Site Name: Fourth Avenue and Gambell Parking Lot

Region: Region 10

Scenario Name: Preliminary Assessment

City, County, State: Anchorage, Municipality of Anchorage Borough, Alaska

Evaluator: Derek Pulvino

EPA ID#: AKN001002925

Date: 08/23/2011

Lat/Long: 61:13:7.81,-149:52:11.95

Congressional District:

This Scoresheet is for: PA

Scenario Name: Preliminary Assessment

Description: The Alaska Real Estate Parking Lot is the location of a historic dry cleaner (C and K Cleaners) and vehicle maintenance business (NC Tire Center). Related to those operations surface soil, subsurface soil, ground water, and air impacts by various chlorinated solvents (tetrachloroethylene [PCE]) and related breakdown products (trichloroethylene [TCE], vinyl chloride [VC]) have been documented

	S pathway	S^2 pathway
Ground Water Migration Pathway Score (S_{gw})	21.42	458.82
Surface Water Migration Pathway Score (S_{sw})	0.24	0.06
Soil Exposure Pathway Score (S_s)	32.41	1050.41
Air Migration Score (S_a)	48.28	2330.96
$S^2_{gw} + S^2_{sw} + S^2_s + S^2_a$		3840.24
$(S^2_{gw} + S^2_{sw} + S^2_s + S^2_a)/4$		960.06
$/ (S^2_{gw} + S^2_{sw} + S^2_s + S^2_a)/4$		30.98

Pathways not assigned a score (explain):

TABLE 3-1 --GROUND WATER MIGRATION PATHWAY SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned	
Aquifer Evaluated: Shallow Aquifer			
Likelihood of Release to an Aquifer:			
1. Observed Release	550	550.0	
2. Potential to Release:			
2a. Containment	10	10.0	
2b. Net Precipitation	10	3.0	
2c. Depth to Aquifer	5	3.0	
2d. Travel Time	35	25.0	
2e. Potential to Release [lines 2a(2b + 2c + 2d)]	500	310.0	
3. Likelihood of Release (higher of lines 1 and 2e)	550		550.0
Waste Characteristics:			
4. Toxicity/Mobility	(a)	10000.0	
5. Hazardous Waste Quantity	(a)	100.0	
6. Waste Characteristics	100		32.0
Targets:			
7. Nearest Well	(b)	18.0	
8. Population:			
8a. Level I Concentrations	(b)	0.0	
8b. Level II Concentrations	(b)	0.0	
8c. Potential Contamination	(b)	77.4	
8d. Population (lines 8a + 8b + 8c)	(b)	77.4	
9. Resources	5	0.0	
10. Wellhead Protection Area	20	5.0	
11. Targets (lines 7 + 8d + 9 + 10)	(b)		100.4
Ground Water Migration Score for an Aquifer:			
12. Aquifer Score [(lines 3 x 6 x 11)/82,5000][c]	100		21.42
Ground Water Migration Pathway Score:			
13. Pathway Score (S_{gw}), (highest value from line 12 for all aquifers evaluated)[c]	100		21.42

[a] Maximum value applies to waste characteristics category
[b] Maximum value not applicable
[c] Do not round to nearest integer

TABLE 4-1 --SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned	
Watershed Evaluated: ship creek			
Drinking Water Threat			
Likelihood of Release:			
1. Observed Release	550	0.0	
2. Potential to Release by Overland Flow:			
2a. Containment	10	10.0	
2b. Runoff	10	0.0	
2c. Distance to Surface Water	5	9.0	
2d. Potential to Release by Overland Flow [lines 2a(2b + 2c)]	35	90.0	
3.Potential to Release by Flood:			
3a. Containment (Flood)	10	10.0	
3b. Flood Frequency	50	0.0	
3c. Potential to Release by Flood (lines 3a x 3b)	500	0.0	
4. Potential to Release (lines 2d + 3c, subject to a maximum of 500)	500	90.0	
5. Likelihood of Release (higher of lines 1 and 4)	550		90.0
Waste Characteristics:			
6. Toxicity/Persistence	(a)	4000.0	
7. Hazardous Waste Quantity	(a)	100.0	
8. Waste Characteristics	100		18.0
Targets:			
9. Nearest Intake	50	0.0	
10. Population:			
10a. Level I Concentrations	(b)	0.0	
10b. Level II Concentrations	(b)	0.0	
10c. Potential Contamination	(b)	0.0	
10d. Population (lines 10a + 10b + 10c)	(b)	0.0	
11. Resources	5	0.0	
12. Targets (lines 9 + 10d + 11)	(b)		0.0
Drinking Water Threat Score:			
13. Drinking Water Threat Score [(lines 5x8x12)/82,500, subject to a max of 100]	100		0.0
Human Food Chain Threat			
Likelihood of Release:			
14. Likelihood of Release (same value as line 5)	550		90.0
Waste Characteristics:			
15. Toxicity/Persistence/Bioaccumulation	(a)	200000.0	
16. Hazardous Waste Quantity	(a)	100.0	
17. Waste Characteristics	1000		56.0
Targets:			
18. Food Chain Individual	50	0.0	
19. Population			
19a. Level I Concentration	(b)	0.0	
19b. Level II Concentration	(b)	0.0	
19c. Potential Human Food Chain Contamination	(b)	0.03	
19d. Population (lines 19a + 19b + 19c)	(b)	0.03	
20. Targets (lines 18 + 19d)	(b)		0.03
Human Food Chain Threat Score:			
21. Human Food Chain Threat Score [(lines 14x17x20)/82500, subject to max of 100]	100		0.0
Environmental Threat			
Likelihood of Release:			
22. Likelihood of Release (same value as line 5)	550		90.0
Waste Characteristics:			
23. Ecosystem Toxicity/Persistence/Bioaccumulation	(a)	2000.0	
24. Hazardous Waste Quantity	(a)	100.0	
25. Waste Characteristics	1000		18.0

Targets:			
26. Sensitive Environments			
26a. Level I Concentrations	(b)	0.0	
26b. Level II Concentrations	(b)	0.0	
26c. Potential Contamination	(b)	0.01	
26d. Sensitive Environments (lines 26a + 26b + 26c)	(b)	0.01	
27. Targets (value from line 26d)	(b)		0.01
Environmental Threat Score:			
28. Environmental Threat Score [(lines 22x25x27)/82,500 subject to a max of 60]	60		0.0
Surface Water Overland/Flood Migration Component Score for a Watershed			
29. Watershed Score[c] (lines 13+21+28, subject to a max of 100}	100		0.00
Surface Water Overland/Flood Migration Component Score			
30. Component Score (S_{sw})[c] (highest score from line 29 for all watersheds evaluated)	100		0

[a] Maximum value applies to waste characteristics category
[b] Maximum value not applicable
[c] Do not round to nearest integer

TABLE 5-1 --SOIL EXPOSURE PATHWAY SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned	
Likelihood of Exposure:			
1. Likelihood of Exposure	550		550.0
Waste Characteristics:			
2. Toxicity	(a)	10000.0	
3. Hazardous Waste Quantity	(a)	10.0	
4. Waste Characteristics	100		18.0
Targets:			
5. Resident Individual	50	50.0	
6. Resident Population:			
6a. Level I Concentrations	(b)	220.0	
6b. Level II Concentrations	(b)	0.0	
6c. Population (lines 6a + 6b)	(b)	220.0	
7. Workers	15	0.0	
8. Resources	5		
9. Terrestrial Sensitive Environments	(c)		
10. Targets (lines 5 + 6c + 7 + 8 + 9)	(b)		270.0
Resident Population Threat Score			
11. Resident Population Threat Score (lines 1 x 4 x 10)	(b)		2673000.0
Nearby Population Threat			
Likelihood of Exposure:			
12. Attractiveness/Accessibility	100	10.0	
13. Area of Contamination	100	20.0	
14. Likelihood of Exposure	500		5.0
Waste Characteristics:			
15. Toxicity	(a)	10000.0	
16. Hazardous Waste Quantity	(a)	10.0	
17. Waste Characteristics	100		18.0
Targets:			
18. Nearby Individual	1	0.0	
19. Population Within 1 Mile	(b)	6.6000000000000005	
20. Targets (lines 18 + 19)	(b)		6.6
Nearby Population Threat Score			
21. Nearby Population Threat (lines 14 x 17 x 20)	(b)		594.0
Soil Exposure Pathway Score:			
22. Pathway Score[d] (S_s), [lines (11+21)/82,500, subject to max of 100]	100		32.41

[a] Maximum value applies to waste characteristics category
[b] Maximum value not applicable
[c] No specific maximum value applies to factor. However, pathway score based solely on terrestrial sensitive environments is limited to a maximum of 60
[d] Do not round to nearest integer

TABLE 6-1 --AIR MIGRATION PATHWAY SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned	
Likelihood of Release:			
1. Observed Release	550	550.0	
2. Potential to Release:			
2a. Gas Potential to Release	500	360.0	
2b. Particulate Potential to Release	500	390.0	
2c. Potential to Release (higher of lines 2a and 2b)	500	390.0	
3. Likelihood of Release (higher of lines 1 and 2c)	550		550.0
Waste Characteristics:			
4. Toxicity/Mobility	(a)	10000.0	
5. Hazardous Waste Quantity	(a)	100.0	
6. Waste Characteristics	100		32.0
Targets:			
7. Nearest Individual	50	45.0	
8. Population:			
8a. Level I Concentrations	(b)	0.0	
8b. Level II Concentrations	(b)	100.0	
8c. Potential Contamination	(c)	75.6	
8d. Population (lines 8a + 8b + 8c)	(b)	175.6	
9. Resources	5	5.0	
10. Sensitive Environments:			
10a. Actual Contamination	(c)	0.0	
10b. Potential Contamination	(c)	0.71	
10c. Sensitive Environments (lines 10a + 10b)	(c)	0.71	
11. Targets (lines 7 + 8d + 9 + 10c)	(b)		226.31
Air Migration Pathway Score:			
12. Pathway Score (S_a) [(lines 3 x 6 x 11)/82,500][d]	100		48.28

[a] Maximum value applies to waste characteristics category
[b] Maximum value not applicable
[c] No specific maximum value applies to factor. However, pathway score based solely on sensitive environments is limited to a maximum of 60.
[d] Do not round to nearest integer